metal supported relative to the whole catalyst, wherein the catalytic metal particles have from 10 to 50000 atoms, and wherein the precious metals form single particles.

Andersen also relates to exhaust gas catalysts. However, the structure taught by this reference is clearly different from that required by present claims. Specifically, Andersen discloses a support which *requires* the presence of: zirconia, ceria, and *lanthanum oxide*. All embodiments of Andersen provide that the lanthanum oxide is present in an amount of at least 2% by weight of these three components. In contrast, the present claims require a porous carrier which consists essentially of ceria-zirconia. It is well established in U.S. patent practice that the transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). Thus, it is urged that the "consisting essentially of" language effectively *excludes* lanthanum oxide from the presently claimed porous carrier, particularly in the amounts disclosed in Andersen, since the presence of lanthanum oxide would materially affect the basic and novel characteristics of the present porous carrier. The present invention is therefore *distinct* from the cited reference based on the absence of lanthanum oxide.

Furthermore, Andersen specifically states that their support is *free from platinum and palladium*. In fact, it seems that Andersen's improvement over the conventional art is the absence of platinum and palladium from their structure. The reference specifically states that their combination provides the advantage that the catalyst is cheaper to make because "not only is palladium unnecessary, but the amount of rhodium required is less than in prior known catalysts." (See col.1, lines 48-51). The reference also states that a further advantage of their combination is that it is less sensitive to poisoning by sulphur-containing compounds in engine exhaust gases. (See col. 1, lines 52-54). Specifically, the present catalyst is less sensitive to sulpher poisoning than are catalysts based primarily on palladium at high loading. (See col.2, lines 39-41).

Indeed, as the Examiner points out, Anderson states that rhodium can be in admixture with other catalytically active material, particularly one or more of Rh, Pt and Pd. However, it is clearly stated in Andersen that these materials are provided on a *separate* support such as a conventional oxide support. They go on to state that the Pt and/or Pd are located on this separate support such that they are "distinct from the Rh on the present support." (See col.3, lines 34-40). Thus, it is urged that nowhere does Anderson provide a ceria-zirconia support with an alloy of two of platinum, palladium, and rhodium thereon.

The Examiner further cites Morita, at paragraph [0095] for disclosing a porous carrier having a specific surface area ranging from 20-200 $m^2/g$. However, it is urged that whether or not this feature is taught by Morita is moot, since Morita still fails to fill the voids of Andersen. That is, Morita also fails to teach a ceria-zirconia support of the present claims, having catalytic metal particles supported thereon which consist essentially of an alloy of two precious metals selected from platinum, palladium, and rhodium. Thus, the present claims fail to be obviated in view of Andersen and Morita.

The Examiner has cited Komatsu et al., but provides no discussion regarding this reference as it relates to claims 1-3. Applicants submit that Komatsu et al. differs greatly from the present invention, since they clearly teach away from the use of platinum, palladium, and rhodium in their catalyst. From col.1, line 55 through col.2, line 27, Komatsu states that catalysts including platinum, palladium, and rhodium suffer from the disadvantage that they partly convert the nitrogen oxides into *ammonia*. Specifically, ammonia produced as a by-product is discharged into the atmosphere, or is converted into nitrogen monoxide which is discharged into the atmosphere as a pollutant. Komatsu asserts that their invention seeks to minimize the production of ammonia, using their specifically formulated catalysts. Komatsu discloses that their catalysts are formed of nickel, copper, and chromium, with the option of additional materials such as yttrium oxide, titanium dioxide, lanthanum oxide and mixtures thereof. Clearly, this reference does not fill the voids of Andersen or Morita, in that it also fails to teach or suggest a ceria-zirconia support having catalytic metal particles supported thereon which consist

essentially of an alloy of two precious metals selected from platinum, palladium, and rhodium.

The Examiner further argues that it would have been obvious for one skilled in the art to optimize the catalytic metal particle atoms, and to form the catalytic metals into single particles as presently claimed. Still, it is urged that one skilled in the art would not have obviously formulated the presently claimed catalyst, since the presently cited references fail to teach several key features of the present claims.

Regarding the dependent claims 2 and 3, it is urged that while some of the individual additional features of these claims may be otherwise known in the art, these claims both relate to *narrower* embodiments of the invention disclosed in claim 1. It is therefore submitted that claim 1 is non-obvious in view of the cited art for the reasons argued above, and that all claims depending from claim 1 should be considered non-obvious as well. For all of the above reasons, Applicants urge that the presently claimed invention is clearly inventive over the cited art, and the present 35 U.S.C. 103 rejection should be withdrawn.

2) The Examiner next rejects claim 4 under 35 U.S.C. 103 over Andersen in view of Morita and in further view of Komatsu. Applicants respectfully urge that this is not the case.

Claim 4 relates to a product formed by reducing the catalyst according to claim 2, wherein the catalyst comprises granular catalytic metal particles having a particle size of 1 to 10 nm supported on a porous carrier. The Examiner asserts that Komatsu teaches particles having a diameter ranging from 2 microns to 2mm. Applicants urge that whether or not Komatsu teaches this feature, the present claims still fail to be obviated by Andersen, Morita, and Komatsu, either alone or in combination. The arguments against these references are repeated from above and apply equally here. Specifically, none of these references teach or suggest a porous carrier consisting essentially of ceria-zirconia, much less such a carrier having the specific formulation presently claimed, and having

catalytic metal particles supported thereon which consist essentially of an alloy of two precious metals selected from platinum, palladium, and rhodium. Thus, whether or not certain ancillary features of the claims are taught, the cited art fails to teach or suggest the key features of the presently claimed invention. For these reasons, it is respectfully urged that the 35 U.S.C. 103 rejection of claim 4 should be withdrawn.

3) Finally, the Examiner rejects claim 9 under 35 U.S.C. 103 over Andersen in view of Morita and in further view of Komatsu. It is urged that this ground of rejection should be withdrawn as well. Claim 9 relates to a product formed by reducing the catalyst according to claim 3, wherein the catalyst comprises granular catalytic metal particles having a particle size of 1 to 10 nm supported on a porous carrier. As with claim 4, the Examiner cites Komatsu against claim 9, asserting that it teaches particles having a diameter ranging from 2 microns to 2mm. Again, it is urged that present claims still fail to be obviated by Andersen, Morita, and Komatsu. The arguments against these references are repeated from above and apply equally here. Again, whether or not certain ancillary features of the claims are taught, the cited references still fail to teach or suggest a porous carrier consisting essentially of ceria-zirconia, much less such a carrier having the specific formulation presently claimed, and having catalytic metal particles supported thereon which consist essentially of an alloy of two precious metals selected from platinum, palladium, and rhodium. Applicants therefore respectfully submit that the 35 U.S.C. 103 rejection of claim 9 should be withdrawn as well.

The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the Examiner believes there is any matter which prevents allowance of the present application, it is requested that the

undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,

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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office (FAX No. 571-273-8300) on April 9, 2009.

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